



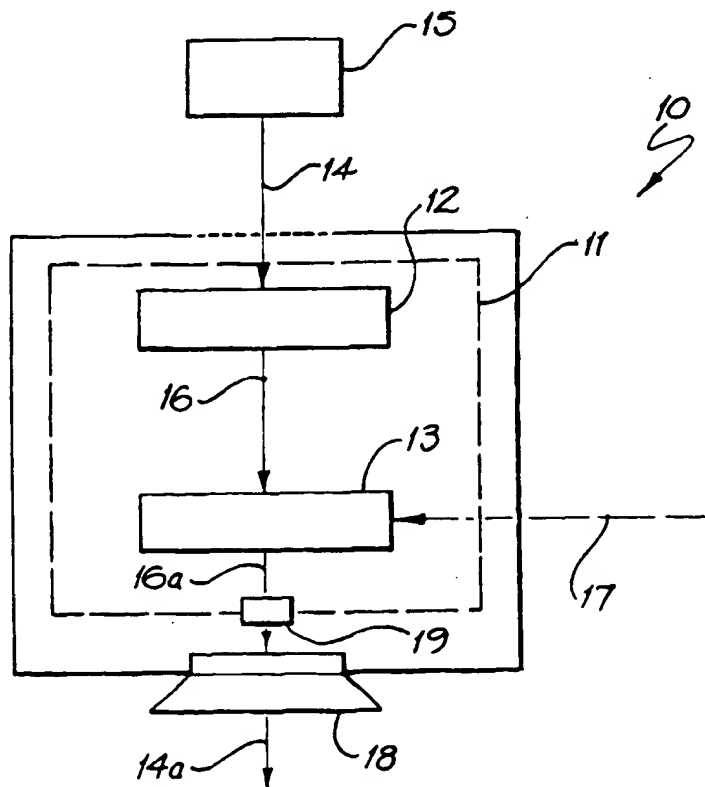
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: TELEPHONE

## (57) Abstract

A telephone (10), such as mobile telephone, having an audio signal recording means (11). The recording means (11) includes an audio signal input means (12) and an audio signal storage means (13). The signal input means (12) is able to transmit at least a first audio signal, the audio signal being representative of an audible sound, to the storage means (13) where it is stored until required in the telephone. The telephone (10), on detecting an incoming call, generates an activation signal that when received by the storage means (13) activates it to pass the stored audio signal to a loudspeaker (18) which converts the audio signal into a sound audible to a user that is in the vicinity of the telephone. The telephone allows a user to select their own ring tone for their telephone.



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## "Telephone"

### Field of the Invention

5 The present invention relates to a telephone, including a fixed, mobile or cordless telephone. The telephone having a recording device for recording audio signals that can be played by the telephone, as an alternative to the standard telephone ring, when there is an incoming call.

### Background Art

10 With advances in technology in the telecommunications area, it is now possible for a telephone owner or user to select the tone and volume of the telephone's ring when it receives an incoming call. This has had particular application in the mobile phone area. At present, however, the number of ring tones available are limited and are pre-programmed into the telephone such that the owner or user is provided with only a relatively limited choice of ring tones. The ring tones presently available include standard telephone  
15 ring tones, for example, the ring tone can be two short tones repeated at regular intervals, a tone that is on and then off for equal periods, short sharp tones repeated at frequent intervals, short tones followed by longer pauses, or longer tones followed by shorter pauses. In some telephones, the ring tone can be more complex and comprise or incorporate some well known musical  
20 tunes.

With an increased number of mobile telephone users, it is not uncommon for one person in a group to hear a telephone ring and to look to their telephone only to find that the ringing telephone is that of another person in the group. In addition to this, frequent ringing of telephones with  
25 standard ring tones, particularly in public areas such as restaurants and shopping centres, can cause a level of irritation to those who find the pre-programmed ringing tones intrusive.

The present invention provides an alternative to the pre-programmed telephone ring tones with a view to avoiding the above problems.

### Disclosure of the Invention

30 In a first aspect, the present invention comprises a telephone having an audio signal recording means, the recording means including an audio signal input means and an audio signal storage means, the signal input means being able to transmit at least a first audio signal, the audio signal being  
35 representative of audible sound. to the storage means where it is stored until required. the telephone. on detecting an incoming call. being adapted to

generate an activation signal that when received by the storage means activates the storage means to pass the stored audio signal to a transducer which converts the audio signal into a sound audible to a user that is in the vicinity of the telephone.

5 In one embodiment of the invention, the signal input means includes a microphone adapted to detect an audible sound transmitted to the input means and generate the audio signal for transmission to the storage means. The microphone is preferably positioned adjacent or in an outer surface of the telephone such that it can readily detect sound waves directed at or  
10 passing past the telephone.

In another embodiment, the signal input means includes a connector means adapted to connect to a cable through which the audio signal can be received by the telephone and then transmitted to the storage means. The connector means can comprise a socket positioned in the outer surface of the  
15 telephone which can receive a plug connected to the cable that facilitates the electrical or optical transmission of the audio signal to the input means. In a further embodiment, a microphone can be connected to an end of the cable that is distal the telephone.

In a further embodiment, the transducer can be mounted adjacent or in  
20 the outer surface of the telephone. The transducer preferably comprises a loudspeaker that converts the audio signal transmitted from the storage means into an audible sound. In one embodiment, the microphone can also act as the loudspeaker for the telephone. In another embodiment, the loudspeaker can be mounted in a headset or to an earpiece adapted to be  
25 worn by the telephone user, the loudspeaker being connected to the telephone by appropriate cabling.

In a still further embodiment, the audio signal generation means can comprise a computer or similar data processing device. The computer can be used to generate the audio signal and be directly connected to the telephone  
30 by a user when required.

In another embodiment, the telephone can be connected to a computer that can dial up another computer, including a computer server or host used to store and transmit information for the Internet, and then download one or more audio signals from a signal repository. The downloaded signal can then  
35 be transmitted from the computer by appropriate electrical or optical connection to the signal input means of the telephone.

In a still further embodiment, the telephone can directly dial up a computer server or host and then download one or more audio signals from the signal repository.

5 The audio signal can comprise digital signals, including compressed digital signals. The signal repository can include web sites on the Internet or the World Wide Web on which are stored digital audio files. Such audio files can be downloaded in short stand-alone segments, for example, as files in the WAV format. The audio files may also be downloaded to the computer or to the telephone as streaming sound, with streaming sound being sound that is  
10 played as it arrives. Formats such as MP3 (MPEG-1Audio Layer-3) can be used to compress a sound sequence into a smaller file (typically about one-twelfth of the size of the original file) while preserving the original level of sound quality when it is played. This is particularly advantageous where the audio file to be downloaded to the computer or telephone is relatively large.  
15 Other formats for downloading or allowing access to suitable audio files from computers, including Internet servers and hosts, can be readily envisaged as being also suitable in the present case.

In the case where an audio signal file has been downloaded to the computer, an audio card and speaker, either connected to the computer or  
20 installed within the computer, can be used to allow the user to listen to the sound or music that has been downloaded. This might be done by the user before the audio signal is provided to the telephone to allow the user to determine that the music is the music that is to be transmitted to and stored in the telephone.

25 In yet a further embodiment, the audio signal transmitted to the storage means can be representative of live music or speech. For example, a user may choose to record on the telephone music played on an instrument or multiple instruments, including original music composed by the owner. In the case of speech, the user may choose to record a message that is played  
30 by the telephone on detecting an incoming call.

In a preferred embodiment, the telephone includes a playback means that, when activated, generates the activation signal which in turn activates the storage means to pass the stored audio signal to the transducer, so  
35 allowing the user to listen to the audio signal presently stored in the storage means and will be played by the telephone when it detects an incoming call. The playback means can comprise a pressure switch in the keypad of the

telephone. Where more than one audio signal is stored in the storage means, the playback switch can be adapted to playback all of the audio signals in sequence or in some other order as desired by the user.

Whether the audio signal is a downloaded digital signal or an audible  
5 signal picked up by a microphone, the signal input means receives the signal and transmits it to the storage means. If necessary, before being transmitted, the audio signal is converted to a signal that can be stored digitally on, for example, a magnetic tape, microchip, integrated circuit or compact disc in the telephone. In one embodiment, the user can download into the storage  
10 means of the telephone a number of different audio signals. In this embodiment, the telephone can include a selector means to allow the user to select which file is to be played through the transducer of the telephone on reception of an incoming call. In a still further embodiment, the selector means can be adapted to allow the user to select different stored audio  
15 signals for different callers. For example, a user can use this feature to determine the identity of the caller, or at least the telephone number of the caller, by the particular audible sound played by the transducer of the telephone.

In a further embodiment, the storage means can transmit the stored  
20 audio signal to an amplifier, which amplifies the signal and passes it to the transducer wherein the audio signal is converted to an audible sound.

The telephone can comprise a mobile or cordless telephone. The mobile telephone can be a GSM telephone, however, other mobile telephone systems, such as CDMA, could be utilised in conjunction with the present  
25 invention. In a still further embodiment, the telephone can be a fixed telephone.

In another embodiment, the signal input means instead of comprising an additional microphone on the telephone may utilise the existing  
30 microphone of the telephone that is normally used to detect the voice of the telephone's user. As such, in this embodiment, the telephone's microphone has two functions. Firstly, the microphone is adapted to receive the voice of a user and secondly it is adapted to receive the audio signal, such as music or speech. In this embodiment, the function of the pre-existing microphone may be alternated by way of a simple double pole switch. Alternatively, the  
35 function of the microphone may be controlled by activation of pressure sensors beneath a keypad on the telephone.

The device according to the present invention may also utilise the existing loudspeaker of the telephone that is held proximate to the ear of a user. As such, in this embodiment, the telephone's loudspeaker has two functions. Firstly, the loudspeaker is adapted to act as the normal  
5 loudspeaker in the earpiece of the telephone and secondly can be used to transduce the audio signal transmitted from the storage means into audible sound. As the audible sound will only be played up until the telephone is activated by the user to take the call, these two uses of the existing loudspeaker are compatible.

10 In another embodiment, the telephone preferably includes a ring tone volume control. This allows the user to set the volume of the audible sound, whether it be musical piece or other sound, transmitted by the loudspeaker when the telephone is detecting an incoming call.

Where more than one audio signal is stored in the storage means, the  
15 storage means can be adapted to transmit each audio signal to the transducer in sequence such that each time the telephone rings, it selects a new audio signal to be transmitted to the transducer. In this embodiment, once each audio signal has been transmitted to the transducer, the storage means would return to the first audio signal on reception of the next telephone call. In  
20 another embodiment, the storage means can include a randomising means which results in the storage means randomly selecting an audio signal to be transmitted to the transducer means, from the plurality of stored audio signals, on reception of the next telephone call.

The present invention allows a user of a telephone, including a mobile  
25 telephone, for example, to download a song or other musical piece from a website on the Internet, the song or musical piece being recorded by the storage means in the telephone, and the recording being activated by a signal from an incoming call such that the telephone emits the sound of the tune or musical piece. In this way, the telephone of the present invention alerts the  
30 user to an incoming call by way of emitting the recorded tune or musical piece.

#### Brief Description of the Drawings

By way of example only, a preferred embodiment of the invention is now described with reference to the accompanying drawings, in which:

35 Figure 1 is a schematic view of one embodiment of the present invention: and

Figure 2 is a schematic view of a different embodiment of the present invention.

#### Description of the Invention

A telephone 10 having a signal recordal system 11 which includes a microphone 12 and a storage device 13 is depicted in Fig. 1. In the depicted embodiment, the microphone 12 is able to detect audible sounds, such as live music. In this case, the microphone 12 can simply be held close to the source of the live music, such as a guitar 15 such that the sound waves 14 can be transmitted to and received by the microphone 12. The microphone 12 converts the received sound waves 14 to an electrical signal 16 which is representative of the sound received by the microphone 12. The electrical signal 16 is transmitted to the storage device 13 wherein the electrical signal 16 is stored in digital form, for example, on magnetic tape, an integrated circuit or compact disc.

Alternatively, instead of the microphone 12, the telephone can comprise a socket 30 which can receive a plug connected to a cable. Such a cable can extend to an audio signal generation means, such as a microphone or an appropriate socket in a computer. The computer can be used to access the World Wide Web on the Internet and download or otherwise transmit digital audio signals to the storage device 13 in the telephone 10. The audio signals can comprise compressed digital signals and can be downloaded using the MP3 format or other appropriate software. It will be appreciated that the telephone 10 could be used by the computer user to dial up an Internet service provider and so access the World Wide Web.

In another embodiment, the telephone 10 could directly dial up a computer acting as server or host for the Internet. In this case, the audio signal could be directly downloaded to the input means and then transmitted to the storage means 13. Where the telephone 10 is a mobile telephone, the audio signal would be transmitted to the telephone using the same network used to carry voice or data traffic to the telephone.

The storage device 13, in the telephone 10 depicted in Fig. 1, also can receive an activation signal 17 generated in the telephone 10 when the telephone 10 detects an incoming telephone call. Upon receiving the activation signal 17, the storage device 13 converts the stored signal to an electrical signal 16a which in turn is transmitted to a loudspeaker 18. The



loudspeaker 18 in turn converts the electrical signal 16 to audible sound 14a that is emitted from the telephone 10.

As depicted in Fig. 1, the electrical signal 16a transmitted from the storage means 13 is amplified by amplifier 19. The amplified signal is then transmitted to the loudspeaker 18 where it is turned back into the audible sound 14a and emitted from the telephone 10.

While the above description has been provided with respect to a single audio signal being stored in the storage device 13, it will be appreciated that the device 13 could store more than one such signal. These stored signals could be transmitted in sequence or in a random pattern to the loudspeaker. Alternatively, the telephone 10 could be modified to allow a user to select which audio signal 16a is transmitted to the loudspeaker 18 depending on the origin of the caller. For example, a user could programme into the telephone 10, a telephone number of a known caller and set up the telephone such that the storage device 13 always transmits a particular stored signal 16a when a telephone call is detected from that telephone number.

As depicted in Fig. 2, in a further embodiment the telephone 10 includes an antenna 21 which detects an incoming call 26 to the telephone 10 and transmits a signal 27 to a signal detection means 22 which in turn transmits a signal 28 to a controlling means 23. Upon receipt of the signal 28, the controlling means 23 passes an activation signal 17 to the storage device 13 causing the storage device 13 to transmit the electrical signal 16a to the loudspeaker 18. The loudspeaker 18 converts electrical signal 16a to an audible sound 14a and emits this sound from the telephone 10.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

## CLAIMS:

1. A telephone having an audio signal recording means, the recording means including an audio signal input means and an audio signal storage means, the signal input means being able to transmit at least a first audio  
5 signal, the audio signal being representative of an audible sound, to the storage means where it is stored until required, the telephone, on detecting an incoming call, being adapted to generate an activation signal that when received by the storage means activates the storage means to pass the stored audio signal to a transducer which converts the audio signal into a sound  
10 audible to a user that is in the vicinity of the telephone.
2. The telephone of claim 1 wherein the signal input means includes a microphone adapted to detect an audible sound transmitted to the input means and generate the audio signal for transmission to the storage means.
3. The telephone of claim 2 wherein the microphone is also used to  
15 detect the voice of a user when the user is speaking into the telephone following commencement of a telephone conversation.
4. The telephone of claim 3 wherein the function of the microphone from being used for detecting audible sound and generating an audio signal for transmission to the storage means to being used to detect a user's voice  
20 during a telephone call may be alternated by way of activation of a microphone control switch on the telephone.
5. The telephone of claim 1 wherein the signal input means includes a connector means adapted to connect to a cable through which the audio signal can be received by the telephone and then transmitted to the storage  
25 means.
6. The telephone of claim 5 wherein the connector means includes a socket that can receive a plug connected to the cable that facilitates electrical or optical transmission of the audio signal to the input means.
7. The telephone of claim 5 or claim 6 wherein a microphone is  
30 connected to an end of the cable that is distal the telephone.
8. The telephone of claim 1 wherein the signal input means can comprise a radio signal receiving means adapted to receive a radio transmitted audio signal.
9. The telephone of any one of the preceding claims wherein the  
35 transducer comprises a loudspeaker that converts the audio signal transmitted from the storage means into an audible sound.

10. The telephone of claim 9 wherein the loudspeaker is mounted adjacent to or in an outer surface of the telephone.

11. The telephone of claim 9 or claim 10 wherein the loudspeaker is also used by a user to listen to a caller when using the telephone following  
5 commencement of a telephone conversation.

12. The telephone of any one of the preceding claims wherein the audio signal is provided to the signal input means by an audio signal generation means.

13. The telephone of claim 12 wherein the audio signal generation means  
10 comprises a computer or data processing device.

14. The telephone of claim 13 wherein the computer can dial up another computer, including a computer server or host used to store and transmit information on the Internet, and then download one or more audio signals from a signal repository to the computer.

15. The telephone of claim 14 wherein the downloaded signal is transmitted from the computer to the signal input means of the telephone.

16. The telephone of claim 13 wherein the telephone is adapted to directly dial up a computer server or host used to store and transmit information on the Internet, and then download one or more audio signals from a signal  
20 repository to the signal input means.

17. The telephone of any one of claims 14 to 16 wherein the downloaded audio signal comprises digital signals, including compressed digital signals.

18. The telephone of any one of claims 14 to 17 wherein the signal repository is a web site accessible by the Internet on which are stored digital  
25 audio files.

19. The telephone of claim 18 wherein the audio files are downloaded in short stand-alone segments.

20. The telephone of claim 18 wherein the audio files are downloaded as streaming sound, with streaming sound being sound that is played as it  
30 arrives.

21. The telephone of any one of claims 1 to 11 wherein the audio signal transmitted to the storage means is representative of live music or speech.

22. The telephone of any one of the preceding claims wherein the telephone includes a playback means that, when activated, generates the  
35 activation signal which in turn activates the storage means to pass the stored

audio signal to the transducer, so allowing the user to listen to the audio signal stored in the storage means.

23. The telephone of any one of the preceding claims wherein the storage means is selected from the group comprising magnetic tape, an integrated  
5 circuit, or compact disc in the telephone.

24. The telephone of any one of the preceding claims wherein the storage means can store a plurality of audio signals.

25. The telephone of claim 24 wherein the telephone includes a selector means to allow a user to select which audio signal is to be transmitted to the  
10 transducer of the telephone on detection of an incoming call.

26. The telephone of claim 25 wherein the selector means allows a user to select different stored audio signals to be transmitted from the storage means to the transducer depending on the origin of the incoming telephone call.

27. The telephone of claim 24 or claim 25 wherein, when more than one  
15 audio signal is stored in the storage means, the storage means can be adapted to transmit each audio signal to the transducer in sequence such that each time the telephone rings, it selects the next audio signal in the sequence to be transmitted to the transducer.

28. The telephone of claim 27 wherein once each audio signal has been  
20 transmitted to the transducer in sequence, the storage means again transmits the first audio signal in the sequence on reception of the next telephone call.

29. The telephone of claim 24 or claim 25 wherein the telephone includes a randomising means which, when activated, results in the storage means randomly selecting an audio signal to be transmitted to the transducer  
25 means, from the plurality of stored audio signals, on reception of the next telephone call.

30. The telephone of any one of the preceding claims wherein the telephone includes an amplifier that receives the audio signal transmitted from the storage means, amplifies the signal, and passes it to the transducer  
30 wherein the audio signal is converted to the audible sound.

31. The telephone of any one of the preceding claims wherein the telephone is a mobile or cordless telephone.

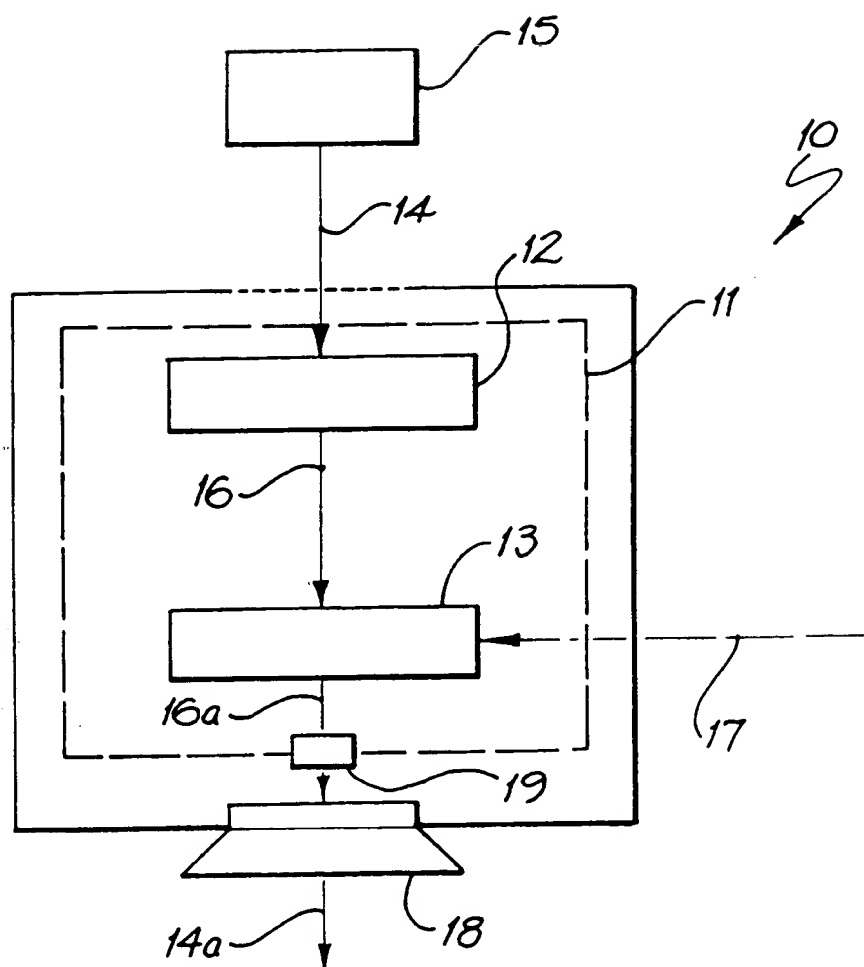


FIG. 1

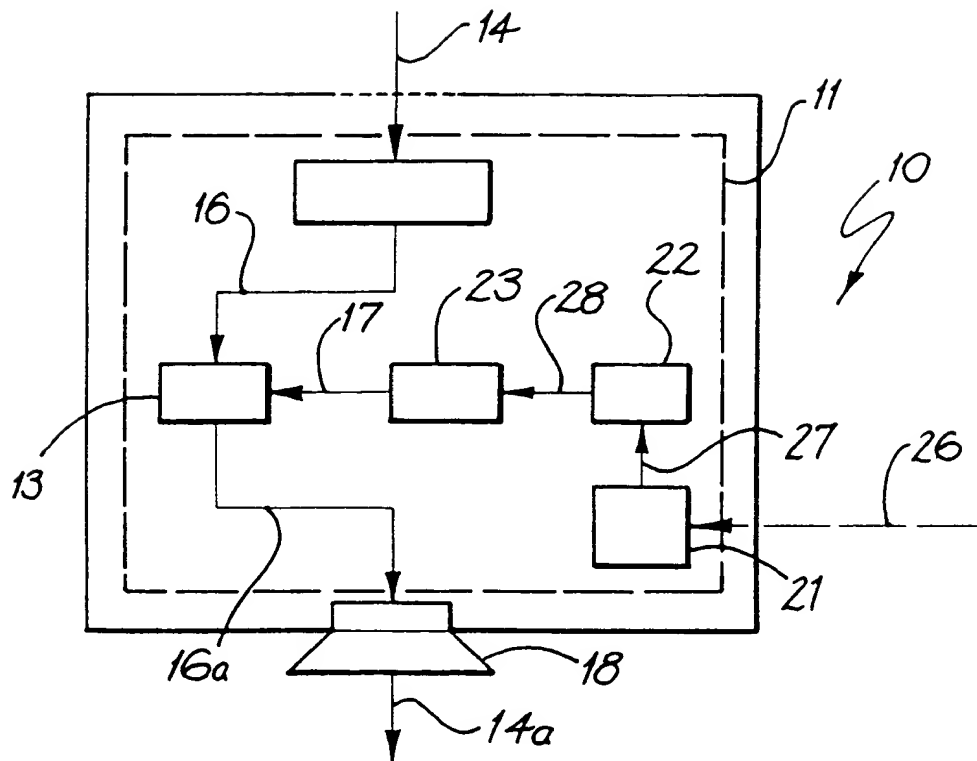


FIG. 2

# INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/AU 00/00124**

## A. CLASSIFICATION OF SUBJECT MATTER

Int Cl<sup>7</sup>:

**H04M 1/00, 1/65**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC H04M 1/00, 1/65; H04Q 7/32**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**WPAT and keywords**

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	GB 2220822 A (Noziri) 17 January 1990 whole document	1-7, 9-12, 21-24, 30 8, 13-20, 25-29, 31
X Y	US 5598461 A (Greenberg) 28 January 1997 whole document	1-7, 9-12, 21-24, 30 8, 13-20, 25-29, 31

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 00/00124

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 5111500 A (Afshar et al) 5 May 1992 whole document	1-7, 9-12, 21-24, 30 8, 13-20, 25-19, 31
X Y	DE 29721122 A (Meyer) 15 January 1998 abstract	1-7, 9-12, 21-24, 30 8, 13-20, 25-29, 31
X Y	CA 2179835 A (AT&T IPM Corp) 6 January 1997 whole document	1-7, 9-12, 21-24, 30-31 8, 13-20, 25-29
Y	US 4866766 A (Mitzlaff) 12 September 1989 whole document	1-31



International application No.  
**PCT/AU 00/00124**

Patent Document Cited in Search Report		Patent Family Member	
GB	2220822	DE	3922806
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END OF ANNEX

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